

## DEFENSE AND DEVELOPMENT ON THE HIGH FRONTIER

By Daniel O. Graham

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The United States is faced with an historic, but fleeting opportunity to take its destiny into its own hands. The ominous military and economic trends which today beset the peoples of the Free World can be reversed, and confidence in the future of free political and economic systems can be restored.

To accomplish this, we need only take maximum advantage of one priceless legacy handed down to us by those free institutions—superiority in space technology. We can escape the brooding menace of "balance of terror" doctrines by deploying defensive systems in space. We can confound the prophets of doom by opening the vast and rich High Frontier of space for



industrialization.

If we are to seize this historic opportunity, we must first muster the political will to discard without qualm the failed doctrines of the past, to attack without quarter the bureaucratic impediments to action, and to meet without flinching the wave of indignation from outraged ideologues at home and abroad.

The Soviet military threat is ominous and growing. This threat is the result of determined efforts by the Soviet Union to establish global military dominance—efforts that have been abetted by poorly conceived U.S. security policies such as Mutual Assured Destruction.

There is a serious and growing Soviet advantage in strategic nuclear power which cannot be countered by the undefended United States except by a threat of

im•pri•mis (im-pri-mis) adv. In the first place. Middle English, from Latin in primis, among the first (things)....

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retaliation that involves national suicide. The preponderance of Soviet conventional power vis-à-vis the U.S. and its allies is also severe and growing. It can no longer be counterbalanced, as it has been in the past, by a credible threat to bring higher-technology U.S. weaponry to bear.

The Soviet Union is increasingly successful in the use of propaganda and the application of direct or indirect military power to disrupt our alliances and to force the conversion of underdeveloped nations to Marxism. This Soviet success now threatens the continuing availability of raw materials which are critical to the industrialized West. In particular, the West is dangerously dependent on diminishing crude oil supplies located in areas threatened by Soviet military or manipulative political power.

Finally, the U.S. alliance system is in serious disarray. It suffers a lost sense of purpose and a perception of a decline in U.S. power and leadership. The Soviet propaganda offensive against U.S. nuclear weapons, designed to persuade Europeans to become neutral, is increasingly effective.

Now the USSR is engaged in a costly and all-too-successful effort to cap these various strategic advantages—in their terms “a favorable correlation of forces”—with Soviet domination of near-Earth space. The Soviets have the only tested space weapons on either side, an anti-satellite system. They have orbited nuclear reactors. They have a manned space station in orbit and are expanding it. Almost all Soviet space activity has a distinct military flavor.

The Soviets consider space a perfect environment in which to exercise their long-standing doctrinal and operational preferences in warfighting—unconventional “first moves,” preemptive attacks or “decapitation attacks” against vital targets such as strategic communications, “combined-arms” moves (as are possible with ship-tracking satellites), and other elements of their well-stocked repertoire. The Soviets integrate military space operations into their strategic thinking. They see space in straightforward terms, as an operational or combatant theater, whereas this country has tended to see it—given our own “strategic culture”—as a “sanctuary” where “support forces” for terrestrial military forces can operate permissively.

If Moscow achieves its aims, we will be faced with a new era of *Pax Sovietica* in which Soviet space power dictates Free World behavior. I believe that the High Frontier of space provides us with the opportunity, perhaps our only opportunity, to frustrate Soviet power ambitions and at the same time open up a new era of hope and prosperity for the U.S. and the Free World.

Throughout man's history, those nations which moved most effectively from one arena of human activity to the next have reaped enormous strategic advantages. For instance, when man's activities moved

from the land to the coastal seas, the Vikings established an extraordinary dominance by excelling at sailing those seas. After the epic voyages of Columbus and Magellan, Spain and Portugal dominated the world through military and commercial control of the new arena of human activity—the high seas. Later England, with her powerful fleet of merchantmen and men-of-war, established a century of *Pax Britannica*. When the coastal seas of space—the air—became a new sphere of human activity, the United States gained great strategic advantages by acquiring the most effective military and civilian capability in aviation. Today, after epic manned and unmanned exploration of space, we shall see which nation puts the equivalent of the British merchantmen and men-of-war into space. We dare not let it be our adversary.

We cannot reverse the ominous trends in the military balance if we adhere to current strategy and try to compete with the Soviets in piling up weapons of current technology. Even if Congress were willing to appropriate unlimited funds for procurement of these weapons (and it is not), our defense production base is in such a sorry state that it could not compete with the Soviet arms production base which is today operating at very high levels. Our best hope is to change our strategy and to move the key competition into a technological arena where we have the advantage.

A bold and rapid entry into space, if announced and initiated now, would end-run the Soviets in the eyes of the world and move the contest into a new arena where we could exploit the technological advantages we hold. This is far preferable to pursuing a numbers contest here on Earth, which will be difficult if not impossible for us to win.

### The Strategic Defense Option

When we look to space for the technological end-run of the Soviets, we find all factors call for an emphasis on the resurrection of a long-neglected aspect of our security—protective strategic defense. I visualize a layered strategic defense. The first layer would be a space-borne defense which would effectively filter a Soviet missile attack in the early stages of flight. The second layer would be a broader space protection system, probably using advanced beam weaponry to further reduce the effectiveness of a missile attack and to defend other space assets from a variety of attacks. The third layer would be a ground-based point defense system capable of removing any Soviet assurance of success of a first strike against our missile silos—even before a space system is deployed—and of intercepting Soviet missiles which later might leak through the space defenses. A passive fourth layer would be civil defense which becomes a valuable aspect of strategy in conjunction with these active defense layers.

In proposing such strategic defenses, one invariably encounters the shibboleths that have plagued considera-

tion of strategic defensive options in the past. It has been an article of faith in the offense-only, Assured Destruction school of thought that strategic defenses in the nuclear era are useless unless they are impermeable or not subject to attack, or that such defenses are impossibly expensive. These are false premises.

Defenses throughout military history have been designed to make attack more difficult and more costly—not *impossible*. Defenses have often prevented attack by making its outcome uncertain. General Grant put a cavalry screen in front of his forces not because the cavalry was invulnerable to Confederate bullets or because he thought it could defeat General Lee, but because he did not want the battle to commence with an assault on his main forces or his headquarters.

It is this same military common sense that must prevail in our approach to strategic defenses today. Given the drastic consequences of a failed nuclear attack on an opponent, the critical military task is to keep a potential aggressor *uncertain of success* if not certain of failure. In the absence of defenses the Soviet military planner has a rather straightforward arithmetic problem to solve to be quite sure of the results of a disarming strike against all locatable U.S. strategic weaponry—ICBM sites, airfields, and submarine bases. His problem is simply to insure that he can deliver two warheads of sufficient size and accuracy against each such target. If, on the other hand, the Soviet planner must consider the effects of a strategic defense, especially a space-borne defense which destroys a portion of the attacking missiles in the early stages of their trajectories, he is faced with a problem full of uncertainties. Such uncertainties are the essence of deterrence.

Another issue which must be carefully addressed is that of space-system survivability. While space systems are nearly invulnerable to a large array of threats with which terrestrial systems must cope (*e.g.*, bombs and bullets) they have some unique vulnerabilities to threats

which can be posed by a technologically advanced adversary. Given the characteristics of currently operating U.S. space systems, one can readily postulate ways for the Soviets to attack them, ranging all the way from throwing sand in their paths to burning them out of space with futuristic beam weapons. The Soviets may develop laser beam weaponry of such power that satellites passing over them could be destroyed with a single burst of energy. It is doubtful, however, that such systems could, in the foreseeable future, successfully attack satellites coming over the horizon toward the Soviet Union where they would be shielded by much more of earth's atmosphere.

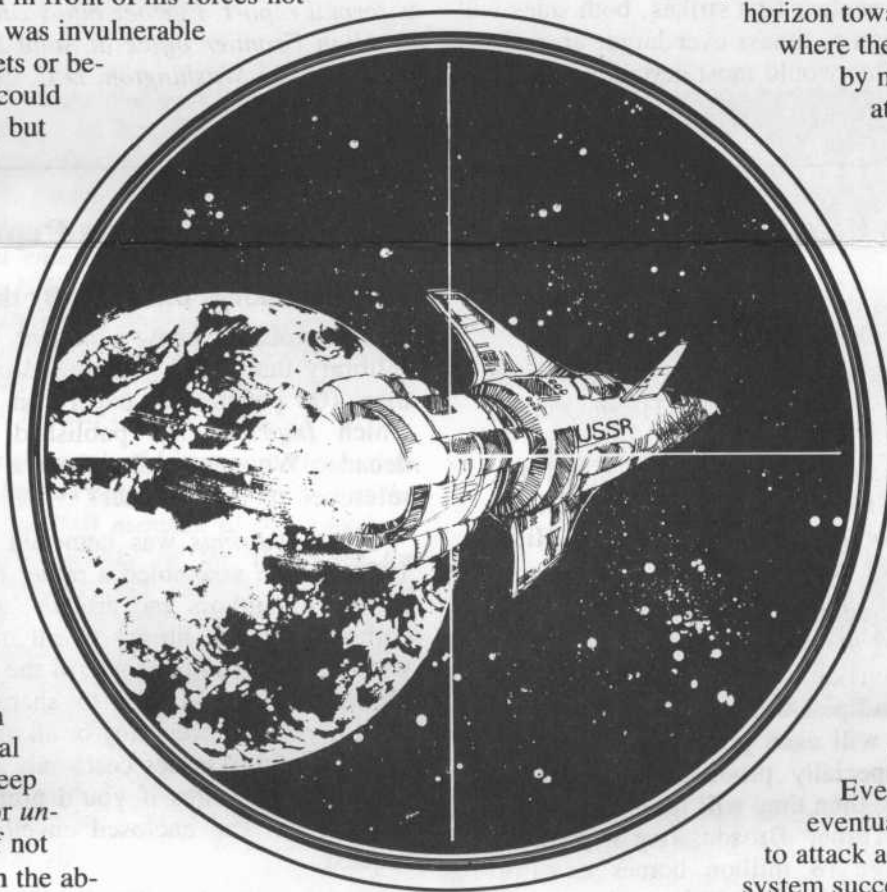
In any case, the most important factors in the survivability problem are probably military rather than technical. Survivability is sharply increased by the ability of space vehicles to destroy threatening objects launched at them or at other U.S. space vehicles.

Even should the Soviets eventually create the means to attack a space-borne defense system successfully in order subsequently to launch a strategic missile

attack, all chances of destroying the U.S. deterrent on the ground would be lost. In these circumstances, launch-on-warning or launch-under-attack become both credible and feasible options for the United States. The Soviets could not expect, after the attack in space, that the U.S. President would hesitate to respond to sensor warnings that a missile attack had been launched from the USSR. This fact alone would make a space-borne defense of great strategic value.

### A New Economic Era

In addition to its military significance, space holds out the promise of a new era of economic expansion. The unique environment of space—zero gravity, near perfect vacuum, unlimited heat absorption, and sterile conditions—opens up a broad range of industrial/commercial possibilities. Space also contains inexhaustible supplies of minerals and solar energy. The economic





potential of space is already being tapped in the communications industry. As the cost of space transportation is lowered, the industrialization of space will burgeon. However, the capital investment in space industries will have to be so large that it is unlikely to be undertaken if space installations are unprotectable from hostile attack. For this reason, military capabilities in space are critical to space-based economic growth.

We should harbor no illusions that space can be limited to "peaceful uses" any more than could previous arenas on land, sea, or in the air. Indeed, most current space assets, U.S. and Soviet, are partially or entirely military—and the most destructive of all weapons, strategic ballistic missiles, must transit space en route to their targets.

The government's role in opening up the High Frontier of space for economic exploitation is basically the same as it has been with the opening of frontiers of the past: exploration, transportation systems, and security. Both the military and non-military uses of space depend on the continued efforts in certain core technologies: improvements in space transportation to reduce the cost-per-pound of materials in orbit, and the creation of permanent, manned space stations at the "terminals" of the space-transport system. While these efforts are primarily the responsibility of government, they should be undertaken in cooperation with private industry and with support from other nations which would benefit.

With a proper combination of space technologies we can sharply improve the security of the U.S. and its Free World allies, and at the same time restore confidence in the ability of Free World economies to meet the challenges of the future. The urgency here is far greater than many people in this country appear to recognize. Following the successful U.S. moon landing in 1969, the Soviets made it clear that, while intending first and foremost to develop maximum possible military capabilities in space, they expect also to achieve dominance with respect to the economic exploitation of space opportunities. All phases of ongoing Soviet space activities that aim at strategic military objectives also serve as stepping stones to the USSR's preeminence in the space environment for non-military purposes as well.

### **Urgent Requirements**

In order to fulfill the objectives of the High Frontier concept, including the rapid closing of the "window of vulnerability," creating the concrete basis for a new strategy of Assured Survival, and opening space for economic growth, the United States must meet nine urgent requirements.

All these requirements *can* be met, some of them with technology already in hand, with components already tested. None of them requires reliance on tech-

nological breakthroughs or commitment to mere scientific theories. The following is a description of one set of programs which could meet the nine imperatives. The costs estimated for these programs are in constant dollars. The costs and times indicated assume a management system which would minimize bureaucratic delays.

1. *Quickly Deployable Point Defense.* A partially tested system exists that could meet the requirement to destroy Soviet confidence in a first strike against our silos. It is a very simple system which fires a large number of small conventional projectiles which form a barrier against a warhead approaching a U.S. missile silo at about one mile from the target. It could be described as "dynamic hardening" instead of an anti-missile system. If deployed to intercept only the first Soviet warhead approaching a silo, it would cost \$2-3 million per defended silo. If it is to intercept a second warhead, the costs increase to about \$5 million per silo.

2. *First Generation Space-Borne Defense.* The requirement for an initial space-borne ballistic missile defense system can be met by using off-the-shelf hardware to create a multiple-vehicle, orbiting system. This system would deploy non-nuclear kill vehicles to destroy Soviet missiles in the early phase of trajectory. Enough weapons-carrying satellites would be orbited to insure continuous coverage of Soviet ballistic missile trajectories, including those of SS-20 Euro-strategic missiles and submarine-launched missiles. This system could provide protection to our allies as well as to the United States. The multiple-satellite deployment permits one satellite to defend itself and several others from hostile attack. It also has the potential for forming the basis of a highly effective and secure command, control, and communications (C<sup>3</sup>) system. Since the system makes maximum use of off-the-shelf space hardware components, it may be the cheapest and quickest available option. This system could start deployment in perhaps as little as three years and be fully deployed in five or six years at a cost of some \$10-15 billion.

3. *Second Generation Space-Borne Defense.* The requirement for higher technology space defense systems could be met by a high-powered laser system on the ground with redirecting mirrors on satellites, or by beam weapons systems deployed in space or in pop-up installations on the ground. All are in the research stage now. Expenditures to continue such research should probably be increased by about \$100 million per year.

4. *High Performance Space Plane.* There is an urgent need to develop a multi-purpose, military, manned space control vehicle to perform a wide variety of space missions such as inspection of friendly or suspect space objects, satellite and space station protection, and adjustment or retrieval of satellites. One such

vehicle is the High Performance Space Plane, or one-man "Space Cruiser," which utilizes available space hardware components and technology and which could be operating in several years for less than \$500 million in cost. It is now under active consideration in the Department of Defense.

5. *Civil Defense.* Civil defense is a multi-faceted endeavor, whose utility and cost effectiveness sharply increase when considered in conjunction with active defenses. A program at a level of \$300-500 million per year would greatly augment overall U.S. security.

6. *Improved Space Transportation.* The immediate answer to improved space transportation is an upgrade of the current Space Shuttle program to improve turnaround time and to create an unmanned cargo-only version. At the same time, development work should begin on a much higher load capacity vehicle. These programs would cost an estimated \$12 billion over a 10-year period.

7. *A Manned Low-Earth-Orbit Space Station.* The currently proposed military Space Operation Center should be given high priority and expanded in concept to include provision for "fly-along" industrial/commercial space installations. The space station should be equipped to receive power for operations from a prototype solar power satellite. A 10-year program to deploy this space station would cost about \$6 billion.

8. *A Space Power System.* This requirement can be met by a proposal using known technology which would place in geosynchronous orbit a solar power satellite and place on Earth a microwave receiving antenna and conversion system providing 500 megawatts of continuous electrical power. This pilot system, modified to include a capability to provide power to a space station with laser transmission, would cost about \$13 billion.

9. *Space Industrial Systems Research and Development.* The costs of R&D for industrial space applications would probably be borne almost entirely by interested private enterprise, with no more than \$50 million per year in government support.

Can the United States afford all of this? The total costs of the High Frontier concept over the next five or six years in outlays of constant dollars might be on the order of \$20 billion. Through 1990 the total costs in constant dollars would probably be about \$35 billion—a figure that compares favorably with what would have been the total cost of the MX-MPS missile system in its original configuration. If one considers possible trade-offs in programs no longer needed or lowered in priority by the existence of an effective strategic defense, the real costs of the High Frontier programs are even lower. There is also a reasonable chance for sizeable cost offsets from industry and allied participation in the most expensive aspects of the High Frontier effort—non-military applications. This is especially true if a

vigorous effort to tap solar energy is emphasized. Several nations have already stated their willingness to assist in such an effort.

In any case, costs to the U.S. taxpayer of implementing High Frontier will certainly be lower than those involved in other approaches to solving urgent security issues, e.g., MX-MPS. The High Frontier approach, therefore, cannot be characterized as unrealistically expensive.

### **An Historic Opportunity**

Last year, the U.S. Space Shuttle Columbia made its dramatic maiden voyage into space and back safely to Earth. This event marked the advent of a new era of human activity on the High Frontier of space. The Space Shuttle is a development even more momentous for the future of mankind than was the completion of the transcontinental railway, the Suez and Panama Canals, or the first flight of the Wright brothers. It can be viewed as a "railroad into space" over which will move the men and materials necessary to open broad new fields of human endeavor in space and to free us from the brooding menace of nuclear attack.

This is an historic opportunity—history is driving us to seize it. Those nations or groups of nations that become preeminent in space will gain the decisive advantage of this strategic "high ground." We must be determined that these advantages shall accrue to the peoples of the Free World, not to any totalitarian power. We can improve the Shuttle, our railway into space, placing space stations at its terminals and sharply reducing the cost-per-pound of material put into space. We can thus open the doors of opportunity to develop entire new space-based industries, promising new products and new jobs for our people on Earth. We can eventually create the means to bring back to Earth the minerals and the inexhaustible solar energy available in space. By doing so, we can confound the gloomy predictions of diminishing energy and material resources available here on Earth. This will not only enhance the prosperity of the world's advanced, industrialized nations, but will also provide the means to solve many of the hitherto intractable problems of the developing countries.

Further, we can place into space the means to defend these peaceful endeavors from interference or attack by any hostile power. We can deploy in space a purely defensive system of satellites using non-nuclear weapons which will deny any hostile power a rational option for attacking our current and future space vehicles or for delivering a militarily effective first strike with its strategic ballistic missiles on our country or on the territory of our allies. This would represent a long-overdue concrete rejection by this country of the "Mutual Assured Destruction" theory which held that the only effective deterrent to nuclear war was a permanent threat by the United States and the Soviet Union to

heap nuclear devastation on the cities and populations of each other.

This legacy of MAD lies at the heart of many current problems of U.S. and allied security. We should abandon this immoral and militarily bankrupt theory of MAD and move from "Mutual Assured Destruction" to "Assured Survival." Should the Soviet Union wish to join in this endeavor—to make assured survival a mutual endeavor—we would, of course, not object.

If both East and West can free themselves from the threat of disarming nuclear first strikes, both sides will have little compulsion to amass ever larger arsenals of nuclear weapons. This would most certainly produce a

more peaceful and stable world than the one we now inhabit. And it would allow us to avoid leaving to future generations the horrendous legacy of a perpetual balance of terror.

We Americans have always been successful on the frontiers; we will be successful on the new High Frontier of space. We need only be as bold and resourceful as our forefathers.

*Several weeks after Daniel Graham gave Hillsdale students this preview, Project High Frontier released its formal report. Further information is available from the High Frontier office at Suite 1000, 1010 Vermont Avenue N.W., Washington, D.C. 20005.*

## Hillsdale To Be on National Television

### 'Counterpoint' Debates Begin August 4

Free-market economist Walter Williams will debate socialist author Michael Harrington on the question of economic opportunity in America, Wednesday evening, August 4, 1982, at 9:05 pm EDT over WTBS cable television nationwide. George Roche, President of Hillsdale College, will moderate the debate.

The program, entitled "Counterpoint," is the first in a regular series produced by Hillsdale's new outreach division, the Shavano Institute for National Leadership. During the hour, Williams and Harrington will each present a short documentary film specially produced to argue his side of the issue; then they will face off in a live debate before Turner Broadcasting's potential audience of over 18 million homes coast to coast. It's an evening *Imprimis* readers won't want to miss.

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